TABLE 62.35–50—MINIMUM SYSTEM MONITORING AND SAFETY CONTROL REQUIREMENTS FOR SPECIFIC SYSTEMS (NOTE 1)—Continued

System	Service	Instrumentation	Alarm	Safety control	Notes
Redundant auxiliary, system, power supply.	.....	Status	Auto transfer.		

[1] See the ABS Steel Vessel Rules (incorporated by reference; see 46 CFR 62.05–1) Part 4–9–4, tables 7A and 8.
[2] See ABS Steel Vessel Rules Part 4–9–4, tables 7A and 8.
[3] See § 113.37 of this chapter.
[4] See subparts 111.33 and 111.35 of this chapter.
[5] See subparts 112.45 and 112.50 of this chapter.
[6] See § 111.12–1(c) of this chapter.
[7] See § 111.12–1 (b), (c) of this chapter.
[8] See ABS Steel Vessel Rules Part 4–9–4, Table 8; and 46 CFR 58.10–15(f).
[9] See ABS Steel Vessel Rules Part 4–9–4, tables 7A and 8.

NOTES ON TABLE 62.35–50:

1. The monitoring and controls listed in this table are applicable if the system listed is provided or required.
2. Safety limit controls must be provided in navigating bridge primary propulsion control systems. See § 62.35–5(c).
3. Safety trip controls and alarms must be provided for all main boilers, regardless of mode of operation. See § 62.35–20(a).
4. Loss of forced lubrication safety trip controls must be provided, as applicable.
5. Override of overspeed and loss of forced lubrication pressure safety trip controls must not be provided. See § 62.35–5(e)(2).
6. Transfer interlocks must be provided.
7. Semiconductor controlled rectifiers must have current limit controls.
8. Interlocks must be provided. See § 62.25–5(a).
9. Main and remote control stations, including the navigational bridge, must provide visual and audible alarms in the event of a fire in the main machinery space.
10. See § 62.50–20(b)(1).
11. Alarms and controls must be failsafe. See § 62.30–1.
12. Vital auxiliary boilers only. Also see part 63.

[CGD 81–030, 53 FR 17838, May 18, 1988; 53 FR 19090, May 26, 1988, as amended by USCG–2000–7790, 65 FR 58461, Sept. 29, 2000; USCG–2003–16630, 73 FR 65190, Oct. 31, 2008]

Subpart 62.50—Automated Self-propelled Vessel Manning

§ 62.50–1 General.

(a) Where automated systems are provided to replace specific personnel in the control and observation of the engineering plant and spaces, or reduce overall crew requirements, the arrangements must make sure that under all sailing conditions, including maneuvering, the safety of the vessel is equal to that of the same vessel with the entire plant under fully attended direct manual supervision.

(b) Coast Guard acceptance of automated systems to replace specific personnel or to reduce overall crew requirements is predicated upon—

(1) The capabilities of the automated systems;

(2) The combination of the personnel, equipment, and systems necessary to ensure the safety of the vessel, personnel, and environment in all sailing conditions, including maneuvering;

(3) The ability of the crew to perform all operational evolutions, including emergencies such as fire or control or monitoring system failure;

(4) A planned maintenance program including routine maintenance, inspection, and testing to ensure the continued safe operation of the vessel; and

(5) The automated system's demonstrated reliability during an initial trial period, and its continuing reliability.

NOTE: The cognizant Officer in Charge, Marine Inspection, (OCMI) also determines the need for more or less equipment depending on the vessel characteristics, route, or trade.

(c) Equipment provided to replace specific personnel or to reduce overall crew requirements that proves unsafe or unreliable in the judgment of the cognizant Officer in Charge, Marine Inspection, must be immediately replaced or repaired or vessel manning will be modified to compensate for the equipment inadequacy.

§ 62.50–20 Additional requirements for minimally attended machinery plants.

NOTE: Minimally attended machinery plants include vessel machinery plants and

spaces that are automated, but not to a degree where the plant could be left unattended. Emphasis is placed on the centralized remote control and monitoring of the machinery plant and machinery spaces.

(a) *General.* (1) Navigating bridge propulsion control must be provided.

(2) An ECC must be provided and must include the automatic and remote control and monitoring systems necessary to limit the operator's activity to monitoring the plant, initiating programmed control system sequences, and taking appropriate action in an emergency.

(3) The ECC must include control and monitoring of all vital engineering systems, including—

(i) The propulsion plant and its auxiliaries;

(ii) Electrical power generation and distribution;

(iii) Machinery space fire detection, alarm, and extinguishing systems; and

(iv) Machinery space flooding safety systems, except the valves described in paragraph (e)(4) of this section.

(4) ECC control of vital systems must include the ability to place required standby systems, auxiliaries, and power sources in operation, unless automatic transfer is provided, and to shut down such equipment when necessary.

NOTE: ECC remote control need not include means for a single operator to bring the plant to standby from a cold plant or dead ship condition or controls for non-vital systems or equipment.

(b) *Alarms and instrumentation.* (1) A personnel alarm must be provided and must annunciate on the bridge if not routinely acknowledged at the ECC or in the machinery spaces.

(2) Continuous or demand instrumentation displays must be provided at the ECC to meet the system and equipment monitoring requirements of this part if the ECC is to be continuously attended. If the watchstander's normal activities include maintenance, a roving watch, or similar activities in the machinery spaces but not at the ECC, both alarms and instrumentation must be provided.

(3) All required audible alarms must annunciate throughout the ECC and machinery spaces.

(c) *Fire detection and alarms.* An approved automatic fire detection and alarm system must be provided to monitor all machinery spaces. The system must activate all alarms at the ECC, the navigating bridge, and throughout the machinery spaces and engineers' accommodations. The ECC and bridge alarms must visually indicate which machinery space is on fire, as applicable.

NOTE: For purposes of this part, the specific location of fires that are not in machinery spaces need not be indicated.

(d) *Fire pumps.* (1) The ECC must include control of the main machinery space fire pumps.

(2) Remote control of a required fire pump must be provided from the navigating bridge. Where one or more fire pumps is required to be independent of the main machinery space, at least one such pump must be controlled from the navigating bridge.

(e) *Flooding safety.* (1) Machinery space bilges, bilge wells, shaft alley bilges, and other minimally attended locations where liquids might accumulate must be monitored from the ECC to detect flooding angles from vertical of up to 15° heel and 5° trim.

(2) The ECC must include the controls necessary to bring at least one independent bilge pump and independent bilge suction required by § 56.50–50(e) of this chapter into operation to counter flooding.

(3) Where watertight doors in subdivision bulkheads are required in the machinery spaces, they must be Class 3 watertight doors and must be controllable from the ECC and the required navigating bridge control location.

(4) Controls must be provided to operate the sea inlet and discharge valves required by § 56.50–95(d) of this chapter and the emergency bilge suction required by § 56.50–50(f). These controls must be arranged to allow time for operation in the event of flooding with the vessel in the fully loaded condition. Time considerations must include detection, crew response, and control operation time.

(f) *Communications.* (1) A means must be provided at the ECC to selectively summon any engineering department member from the engineering accommodations to the ECC.

(2) The voice communications system required by § 113.30–5(a) of this chapter must also include the engineering officers' accommodations.

(g) *Electrical systems.* (1) The ECC must include the controls and instrumentation necessary to place the ship service and propulsion generators in service in 30 seconds.

(2) The main distribution and propulsion switchboards and generator controls must either be located at the ECC, if the ECC is within the boundaries of the main machinery space, or the controls and instrumentation required by part 111 of this chapter must be duplicated at the ECC. Controls at the switchboard must be able to override those at the ECC, if separate. Also see § 111.12–11(g) and § 111.30–1 regarding switchboard location.

(h) *Maintenance program.* (1) The vessel must have a planned maintenance program to ensure continued safe operation of all vital systems. Program content and detail is optional, but must include maintenance and repair manuals for work to be accomplished by maintenance personnel and checkoff lists for routine inspection and maintenance procedures.

(2) The planned maintenance program must be functioning prior to the completion of the evaluation period for reduced manning required by § 62.50–1(b)(5).

(3) Maintenance and repair manuals must include details as to what, when, and how to troubleshoot, repair and test the installed equipment and what parts are necessary to accomplish the procedures. Schematic and logic diagrams required by § 62.20–1 of this part must be included in this documentation. Manuals must clearly delineate information that is not applicable to the installed equipment.

[CGD 81–030, 53 FR 17838, May 18, 1988; 53 FR 19090, May 26, 1988; 53 FR 24270, June 28, 1988; USCG–2004–18884, 69 FR 58346, Sept. 30, 2004; USCG–2014–0688, 79 FR 58281, Sept. 29, 2014]

§ 62.50–30 Additional requirements for periodically unattended machinery plants.

NOTE: Periodically unattended machinery plants include machinery plants and spaces that are automated to the degree that they are self-regulating and self-monitoring and could safely be left periodically unattended. Emphasis is placed on providing systems that act automatically until the crew can take action in the event of a failure or emergency. Requirements are in addition to those of a minimally attended machinery plant.

(a) *General.* The requirements of this section must be met in addition to those of § 62.50–20 of this part.

(b) *Automatic transfer.* Redundant vital auxiliaries and power sources must automatically transfer to the backup units upon failure of operating units.

(c) *Fuel systems.* Each system for the service or treatment of fuel must meet section 4–6–4/13.5 of the ABS Steel Vessel Rules (incorporated by reference; see 46 CFR 62.05–1).

(d) *Starting systems.* Automatic or remote starting system receivers, accumulators, and batteries must be automatically and continuously charged.

(e) *Assistance-needed alarm.* The engineer's assistance-needed alarm (see subpart 113.27 of this chapter) must annunciate if—

(1) An alarm at the ECC is not acknowledged in the period of time necessary for an engineer to respond at the ECC from the machinery spaces or engineers' accommodations; or

(2) An ECC alarm system normal power supply fails.

(f) *Remote alarms.* ECC alarms for vital systems that require the immediate attention of the bridge watch officer for the safe navigation of the vessel must be extended to the bridge. All ECC alarms required by this part must be extended to the engineers' accommodations. Other than fire or flooding alarms, this may be accomplished by summarized visual alarm displays.

(g) *ECC alarms.* All requirements of this part for system or equipment monitoring must be met by providing both displays and alarms at the ECC.

(h) *Fire control station.* A control station for fire protection of the machinery spaces must be provided outside the machinery spaces. At least one access to this station must be independent of category A machinery spaces, and any boundary shared with these spaces must have an A–60 fire classification as defined in § 72.05 of this chapter. Except where such an arrangement is not possible, control and monitoring cables and piping for the